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acid, and many other substances have been tried and advocated, and various processes for steeping or washing the grain, or for blowing off spores with powerful draught of air, have found more or less favor. In all these cases the result aimed at is to keep the germinating wheat, etc., from contact with the spores, and no one is likely to call in question the wisdom of the intention.

But another question obtrudes itself here, and that is: If the sporidia can really infect the young wheat seedling, etc., only in the stage and at the place described, then should it not be possible to attack the question of protection from another stand-point? In other words, if the fungus can only enter the tender tissues at the collar of the young seedling, then a few hours more or less in the time occupied in the process of germination may make all the difference to the seedling. All these conditions or adaptations which hurry or facilitate the vigorous germination of the seed must lessen the danger of infection, and if it can be shown conclusively that this is the case, an important service to the community has once more been rendered by the biologists. The ground is a little difficult, however, because, unless we are quite sure of our steps, it is somewhat easy to go astray from facts to hypotheses.

MUCRONOPORUS, E. & E.

By J. B. Ellis and Benj. M. Everhart.

The following additional species of *Polyporeæ* have the hymenium spiny:

Mucronoporus *ferruginosus* (Schrad.) issued in N. A. F., 111, as *Polyporus contiguus*, Pers. The N. A. F. specimens were determined by Berkeley some twenty years ago from specimens sent him from Newfield, N. J. Spines abundant, well developed, 30–40 by 5–6μ. Specimens on osage-orange from Missouri (Demetrio, No. 138), and on *Vitis* from Ohio (Morgan, 577), agree in all respects with the Newfield specimens. In Fr. Epicrisis the pores are said to be equal ("æqualibus"). In N. A. F., 111, they vary from round to flattened and subsinuous, and agree in all respects with three specimens of *Poria ferruginosa* (Schrad) from Herb. Berkeley (kindly sent with many other things by Dr. M. C. Cooke). The N. A. F. specimens also agree much better with the description of *P. ferruginosa* than with that of *P. contigua*, and we have very little doubt in referring them to that species.

The specimen of *P. contiguus* in Rav. Fungi Car. I, 16, has the pores equal and round, or nearly so, and judging from specimens in our Herb. from Morgan (74 and 324) are the same as the "*P. unitus*, P rs." in "The Flora of the Miami Valley." The Ohio specimens are on wood of deciduous trees, and the same thing is not uncommon around Newfield on dry dead limbs of oak. Colonel Calkins also sends it from Florida (Nos. 65, 114, 126, 131) on dead limbs of various deciduous trees.

All these we are satisfied are the same, being at first of a yellowish cinnamon color, becoming darker (chestnut) and finally fading more or less, being made up of a thin (1–2^{mm} thick), continuous stratum of subequal, nearly round, pores connected at the base by a thin membrane and with a narrow sub-indefinite margin. The fungus often extends along the limb for 6 inches or more. The inner surface of the pores is constantly clothed with spines, but they are less abundant and mostly shorter (20–30μ) than in N. A. F., 111. There seems good reason to doubt whether this is the *P. unitus* Pers. It certainly does not agree with the figure in Fries Icones which represents it as growing in definite, orbicular, or oblong patches, with a definite margin. *P. unitus* is also said to grow on wood of fir trees and to be 4–5^{mm} thick. We should rather refer the *P. contiguus* of Rav. Car. and the *P. unitus* of the "Flora of the Miami Valley" to *P. floccosus*, Fr., Hym. Eur., 572. The *P. contiguus*, Fr., in deThümen's Mycotheca, 1303, on wood of *Picea vulgaris*, collected in Finland by Karsten, has somewhat the same general appearance, but is softer, has a more distinct margin, and is, as far as we can see, without spines. The Finland specimen certainly agrees better with the *description* of *P. contiguus* than any of the American specimens above mentioned, and is probably the species described by Fries.

MUCRONOPORUS OBLIQUUS, (Pers.). An authentic specimen from the herbarium of Fries and one from Dr. P. A. Karsten, Finland, have the hymenium very spiny. Spines at first ovate-conic, 8–12μ, soon elongated 15–30 by 6–8μ, some even 35–40μ long. The specimens in N. A. F. 313 are certainly not this species. The pores are smaller, color inclining more to yellow, and hymenium unarmed or with a very few short spines. There is hardly a doubt that this (N. A. F. 313) is a resupinate form of *Fomes igniarius*, or in some copies (specimens decidedly yellow and spores ferruginous) of *Fomes rimosus*, (Berk.).

MUCRONOPORUS SPISSUS, (Schw.). Specimen from Ohio (Morgan, 298) and from West Chester, Pa. (Everhart), both on hickory. Spines tolerably abundant, 15–25 by 4–5μ. This is a very different thing from the *P. spissus* in Herb. Schw. which appears to be the same as *P. salmoni color*, B. & C. This species (*P. spissus*, Ohio and Pennsylvania specimens) originates beneath the bark, which is soon thrown off directly over it, leaving the surface of the pores lower than that of the bark. The thin, narrow margin is closely attached to the broken margin of the surrounding bark, so as generally to be turned up perpendicularly, but is not properly incurved, though in old specimens after the surrounding bark has fallen away it may have something of that appearance. Whether it is the species described by Schweinitz may perhaps be doubted.

MUCRONOPORUS IGNIARIUS, (L.). Finland species from Karsten agree with those in de Thümens Austrian Fungi Nos. 714 and 1007 and Mycotheca Marchica 1504. Spines not abundant, 8–20 by 5–6μ. In poorly developed specimens and resupinate forms of this species the spines are either entirely wanting or very scarce. The specimens in N. A.

F. 915 are doubtful. There appear to be two species mixed, and neither of them in any of the copies now accessible to us are *P. igniarius.* In *some* of the copies certainly this number is *P. rimosus*, Berk., which is yellower and in the young stage of growth has the pileus subtomentose-velutinous, with the hymenium unarmed (as far as we have yet seen) and the spores *ferruginous.*

MUCRONOPORUS NIGRICANS, Fr. Finland specimens from Karsten agree perfectly with specimens collected by Miss Minns on birch trees in New Hampshire. Spines abundant, 12–20 by 5–6μ.

MUCRONOPORUS SALICINUS, (Pers.). Specimens from Karsten Finland. Spines tolerably abundant, 15–25 by 5–6μ. Specimens collected by Miss Minns in the Lake Superior region agree perfectly with the Finland specimens. Both this and the preceding (*M. nigricans*) have the pileus smooth, zoned, and black, but *M. salicinus*, according to the description and specimens, is for the most part resupinate with only a narrow reflexed margin, while in the typical *M. nigricans* the pileus is dimidiate without any effused or resupinate part extending down below it, but in this too there are forms either entirely or partly resupinate.

MUCRONOPORUS CONCHATUS, (Pers.). Specimens from Dr. C.B. Plowright, England. Spines few but stout, 15–25 by 6–8μ. The specimens in N. A. F. 918 have the pores a little smaller, the color inclining more to yellow and the spines rather more abundant. This species has very much the same general appearance as *M. salicinus* but the pileus is *tomentose* and rough.

TRAMETES PROTRACTA, Fr., and FOMES TENUIS, Karst. (specimens from Karsten), also have the hymenium thickly studded with long (30–40μ) spines and will be included in *Mucronoporus.* It may be noted that in all the species enumerated in this and the former paper the color of the hymenium is some shade of rust color or brown. We have not yet noticed any of the light colored species with the hymenium spiny. The same remark will apply to *Hymenochæte.*

NOTES.

By B. T. GALLOWAY.

ASCOSPORES OF THE BLACK-ROT FUNGUS AS AFFECTED BY COVERING WITH EARTH.

As is now well known the ascospores of the fungus causing black-rot of grapes are formed—at least in the majority of cases—during the spring and early summer months in the old berries which were affected the previous season with the disease. On the supposition that burying the old berries in the spring by turning them under with the plow will destroy the spores, many grape-growers go to considerable trouble and expense every year in order that this work may be done effectually. For the purpose of ascertaining just what effect covering berries, which